

# Claims

- [c1] An electric percussion instrument comprising:
- a surface portion that vibrates in response to an activating action, such as striking with hands or sticks or the interception of vibrational energy from another electric percussion instrument placed nearby, thus creating sound energy directly;
  - an electrically charged or chargeable material attached to said surface portion, thus enabling the vibrational state of the surface to be determined by means of an electric device.
- [c2] An electric percussion instrument as described in Claim 1, where said percussion instrument comprises a flexible material, such as a drumhead assembly.
- [c3] An electric percussion instrument as described in Claim 1, where said electric percussion instrument comprises a rigid material, such as a cymbal assembly.
- [c4] An electric percussion instrument as described in Claim 1, further comprising means to reduce or minimize sound output from said electric percussion instrument, such as through addition of acoustically damping mate-

rials or holes to said percussion instrument.

- [c5] An electric percussion instrument as described in Claim 1, further comprising means to shield said electrically charged or chargeable surface from electromagnetic interference.
- [c6] An electric percussion instrument as described in Claim 1, further comprising means of converting the vibrational state of said surface to a signal that can be sent to an external device, such as an electric circuit with an appropriate sensor.
- [c7] An electric percussion instrument as described in Claim 6, further comprising a mount for supporting said electric percussion instrument, thus allowing it to vibrate in a desired manner.
- [c8] An electric percussion instrument as described in Claim 7, further comprising means of excluding electromagnetic interference from said signals.
- [c9] An electric percussion instrument as described in Claim 7, further comprising:
  - a plurality of additional said electric percussion instruments, which can respond vibrationally to direct activating actions by the user or vibrational responses of other said electric percussion instru-

ments, thus producing additional sounds;  
a plurality of mounts for said additional electric percussion instruments that allow them to vibrate in a desired manner;  
means of converting the vibrational state of said additional electric percussion instruments to signals that can be sent to external devices;  
means of excluding electromagnetic interference from said signals, such as electromagnetic shielding or filtering circuitry.

[c10] An electric percussion instrument as described in Claim 7, further comprising means of modifying the output signals of said electric percussion instrument to change their characteristics, such as amplitude or spectral composition.

[c11] An instrument housing comprising:  
mounts for one or more electric percussion instruments as described in Claim 1, thus allowing them to vibrate in a desired manner in response to activating actions by the user;  
means of converting the vibrational state of said electric percussion instruments to signals that can be sent to an external device.

[c12] An instrument housing as described in Claim 11, further

comprising means of excluding electromagnetic interference from said signals.

[c13] An instrument housing as described in Claim 11, further comprising means of modifying the output signals of said instrument to change their characteristics, such as amplitude or spectral composition.

[c14] An instrument housing as described in Claim 11, further comprising means of providing an activating action to one or more electric percussion instruments mounted on said housing.

[c15] An electronic apparatus comprising:  
a plurality of sensors comprising electrically charged or chargeable surfaces, sensitive to vibrations occurring in electric percussion instruments as described in Claim 1 placed in close proximity to said sensors;  
means of converting time-varying changes in voltage differences between said sensors and said electric percussion instruments to signals that can be sent to external devices.

[c16] An electronic apparatus as described in Claim 15, further comprising mounts for said electric percussion instruments placed near said sensors.

[c17] An electronic apparatus as described in Claim 16, further

comprising a plurality of said electric percussion instruments that can be activated by a user, thus creating sound and signals.

[c18] An electronic sensor as described in Claim 15, further comprising means of transforming said signals to make them more desirable, such as changing their amplitude or their spectral composition.